# Equity and Greenhouse Gas Responsibility

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CLIMATE CHANGE:

# Equity and Greenhouse Gas Responsibility

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**U**nder the Kyoto Protocol, industrialized nations have approved commitments to reduce greenhouse gas (GHG) emissions. These commitments apply only to developed nations, reflecting the international consensus that the industrialized countries should take the lead in mitigating climate change.

The U.S. government has made ratification of the Kyoto Protocol conditional on "meaningful participation" by developing nations in mitigating GHG emissions. By imposing this requirement before the long-term equity concerns of developing countries are adequately addressed, the United States may effectively block the implementation of the protocol. Developing countries cannot reasonably be expected to restrict their future emissions without being assured of a fair allocation scheme that will not impair their ability to develop. We argue for the long-term allocation of emissions based on equal rights to the atmospheric commons for every individual (per capita) as a solution to this impasse (1, 2).

Today, global carbon emissions average about 1 metric ton per year (tC/year) per person. U.S. per

capita emissions exceed 5 tC/year, and Japan and Western European nations emit 2 to 5 tC/year per capita (3). In comparison, per capita emissions are about 0.6 tC/year in the developing world, and more than 50 developing countries have emissions under 0.2 tC/year. Yet, in order to prevent atmospheric GHG levels from exceeding twice the preindustrial levels, average worldwide emissions must be stabilized at levels below 0.3 tC/year per capita for a future world population anticipated to stabilize near 10 billion people (4).

The Kyoto Protocol assigned emissions caps to the industrialized countries based on their 1990 emissions levels (a "grandfather clause"). By basing future emissions caps on past levels, the protocol rewards historically high emitters and penalizes low emitters (5). A fair long-term agreement will require a transition to limits based on equal per capita emissions (6).

A per capita allocation can work because it is simple. Most of the alternatives under consideration blend past emissions with analysis of outcomes. They assume that the consequences of climate change for different nations, as well as their abilities to ameliorate or adapt, can be understood in advance.

A long-term agreement based on historical levels would allow higher emitters to impose environmental damages, potentially large, on other countries, in violation of the widely accepted "polluter pays" principle. This imposition directly contravenes international environmental law.

Ethically, disparate claims to common resources are difficult to justify. The concept that all people have equal rights is a fundamental principle of many modern ethical and legal codes. This concept of equal rights is especially relevant for common pool resources that exist outside the legal control of individuals or nation states. For example, the United Nations (U.N.) Convention on the Law of the Sea requires common ownership of deep-sea resources for the benefit of all humanity.

An important precedent is that governments have adopted egalitarian principles in allocating resource rights even in cases where there were large preexisting claims. For example, the Public Trust Doctrine, a powerful part of Anglo-American common law, ensures access to inland water resources based on egalitarian principles (7). In addition, the acid rain title of the U.S. Clean Air Act Amendments of 1990 allocated emissions according to egalitarian rules (8). The long-term per capita allocation of emission rights that we propose would build on these precedents.

Criticisms of a per capita allocation plan are that it is not politically realistic, as it implies transfers of resources from current high to low emitters, and that it would encourage population growth. The latter concern can be addressed by choosing a fixed base-year population or by determining a population baseline incorporating reasonable declines in population growth rates (1, 6). As to the first objection, agreements sustaining unequal emissions levels are not realistic either, because developing countries are unlikely to accept permanent restrictions on per capita emissions levels lower than those of industrialized nations. Further, institutionalizing inequity is a poor basis of cooperation. Equal per capita emissions represent a compromise limiting the liability of the industrialized nations for their cumulative emissions, without permanently accepting existing inequalities (9). A phase-in period would

be needed in which the diverse situations and emission levels of different countries are recognized (10).

Two goals of the upcoming sixth Conference of the Parties to the U.N. Framework Convention on Climate Change are to provide a political deadline to trigger ratification of the treaty by industrialized nations and to motivate significant action by developing countries toward the convention's objectives. Adoption of the principle of equal per capita emissions rights could help resolve the objections of both developed and developing countries and ease the path for the community of nations to implement the Kyoto Protocol.

**References and Notes**


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2. We discuss allocations in the context of caps assigned to countries (as in the Kyoto Protocol), but the principle of equal per capita rights could be applied to other ways of establishing limits, such as through taxes on GHG emissions.
3. G. Marland *et al.*, in *Trends: A Compendium of Data on Global Change* (Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, TN, 1999). ">
4. 4. J. T. Houghton *et al*., Eds., *The Science of Climate Change: Contribution of Working Group I to the Second Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge Univ. Press, Cambridge, 1996), 572 pp.
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6. A. P. Kinzig and D. M. Kammen, *Global Environ. Change* **8**, 183 (1998).
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9. We also recognize the potential role of cost-based equity principles, including responsibility in proportion to income, ability to pay, or present or historical emissions. An emissions-based principle is operationally more practical, is viable in the long term, and leads to similar outcomes. Any scheme would likely be augmented with policy measures such as emissions trading and phased compliance to further promote long-term equity. We leave for subsequent debates the important issue of compensation for damages caused by climate change.
10. In addition, acceptance of a principle of equal per capita rights may make possible the eventual negotiation of a global cap, strengthening any proposed trading mechanism, such as the Clean Development Mechanism. See, for example, D. Dudek and J. Goffman, Emissions Budgets: Building an Effective International Greenhouse Gas Control System (Environmental Defense Fund, New York, 1997).


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